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CRITICAL SUCCESS FACTORS FOR IBS ADOPTION IN MALAYSIAN
CONSTRUCTION INDUSTRY

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A report submitted in partial fulfillment of the
requirement for the award of the degree of
Master of Civil Engineering (Civil - Structure)

Faculty of Civil Engineering
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June, 2008

“I declare that this project entitled “*Critical Success Factors for IBS Adoption in Malaysian Construction Industry*” is the result of my own research except as cited in references. This project has not been accepted for any degree and is not concurrently submitted in candidature of any other degree”

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*“Almighty Allah, please give blessing to them...
My mom, my dad, my sisters, my lecturers,
my friends, my beloved,
and to all Muslims... this is for us”*

*Specially dedicated to my mom, Rohana Mohd Isa, my dad, Basri Zakaria, my siblings, Dila,
Miya, Tatie & Sara. And my Fiance Mohammad Rizal.*

For your everlasting love and care....

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ABSTRACT

The implementation of Industrialised Building System (IBS) in Malaysia by using precast concrete elements were introduced since 1966 when the government launched two pilot projects in 1966 which involves the construction of Tuanku Abdul Rahman Flats in Kuala Lumpur and the Rifle Range Road Flats in Penang. Statistic from Bank Negara shows large scale dependency on foreign workers causes remittances of up to RM7.5 billion each year and creates social and health problems to the local populace. From the survey conducted by Construction Industry Development Board (CIDB) Malaysia, the level of usage of IBS in the local construction industry is 15% in 2003 although many government initiatives have been introduced to encourage the use of IBS. This research is to study the current awareness of the usage of IBS in Malaysia. It will be analyse ways to improve the implementation of IBS in Malaysia and also to identify the success factors and barriers for IBS adoption in Malaysian building construction industry. The information and data gathered through questionnaire and processed using average index method. The study will focused on success factors and barriers of IBS in current scenario in the local construction industry and therefore the strategic plan will be produced in this study.

ABSTRAK

Perlaksanaan Sistem Bangunan Berindustri (IBS) di Malaysia menggunakan elemen konkrit pasang siap mula diperkenalkan oleh kerajaan sejak tahun 1966 dengan pelancaran dua projek pembinaan sulung yang terdiri daripada pembangunan Flat Tunku Abdul Rahman di Kuala Lumpur dan Flat Rifle Range Road di Pulau Pinang. Statistik dari Bank Negara menunjukkan kira-kira RM 7.5 bilion disalurkan ke negara asing akibat dari penggantungan terhadap tenaga buruh dari negara asing. Daripada tinjauan yang dibuat oleh CIDB, perangkaan menunjukkan bahawa tahap penggunaan Sistem Bangunan Berindustri dalam sector pembinaan adalah hanya 15% pada tahun 2003 walaupun kerajaan telah mengambil banyak inisiatif telah dijalankan untuk menggalakkan penggunaan IBS. Oleh itu, satu kajian dilakukan untuk mengetahui tahap kesedaran tentang penggunaan IBS di Malaysia. Seterusnya menganalisa kaedah untuk meningkatkan penggunaan IBS di Malaysia dan menentukan faktor kejayaan kritikal dan halangan dari IBS. Kajian ini tertumpu pada faktor kejayaan dan halangan terhadap pelaksanaan IBS di Malaysia. Kaedah Indeks Purata digunakan untuk menganalisis data. Oleh itu, plan strategik diperolehi untuk meningkatkan penggunaan IBS.

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CHAPTER 1

INTRODUCTION

1.1 Background

The improvement of productivity and quality in building construction can be attained only through intensive industrialisation and building system process development. The industrialisation of building is most effective when as many as possible of the building components are prefabricated in a plant with appropriate equipment and efficient technological and managerial methods. Comprehensive prefabricated elements that produced in the plant considerably reduce both the amount of work onsite and dependence on the skill of available labour, on the weather, and on various local constraints.

Historically, the industrial revolution affected the building sector in many ways. Perhaps it's most important affects were the introduction of structural steel and reinforced concrete as main building materials in the second half of the 19th century. In addition, reinforced concrete established itself as one of the major building materials because it had some distinctive advantages over other prevalent

material. Its production process was relatively simple; it could be moulded into any shape and with proper processing yield an attractive exterior surface.

One of the first applications of pre-cast concrete components was by W.H. Lascelles in England in 1878. Lascelles employed thin pre-cast concrete plates attached to timber posts for use in walls and attached to concrete joints for use in floors of residential cottages (Warszawski, 1999).

In Malaysia IBS started with the establishment of the Ministry of Local Government and Housing in 1964. The Ministry focused then on the need to provide low cost houses for the low income group. Towards this, housing programmes for the low income people was launched and by 1966 the Ministry has launched two pilot projects in two major cities namely Kuala Lumpur and Penang (AbdulRahim S., 2004).

During the five years of the Ninth Malaysian Plan, Malaysia built an amazing one million dwelling, which constantly amazes visiting building professionals. The Malaysian housing industry mass-produces more houses on per capita basis than any other countries in the world. However, we must come to terms with harsh reality that Malaysia is stuck at the bottom rung of the building technology ladder.

The construction industry involves the participation of seven various sectors. This includes the Client/Developer Sector, the Consultant Sector which includes project management consultants, planners, architects, engineers, quantity surveyors, land surveyors and other specialist consultants, the Contractor Sector which also includes the main contractor, specialist and nominated sub-contractors, The Material and Equipment Supplier Sector, Manpower Sector, which includes unskilled, semi-skilled and skilled workers, The Finance Sector which involves banks, finance and

credit companies and lastly, the Approving Sector, which involves the local authorities, state and federal government. The efficiency and productivity of the industry depends largely on how the various sectors can jointly co-operate and try to understand each others' needs and problems.

Based on the report by CIDB (2000), it also underlines the contributions from the construction sector are more than just economic; the products of construction whether directly or indirectly through provision of superior infrastructure and buildings has contributed extensively towards the creation of wealth and quality of life of the population. The activities generated from the construction activities will in turn generate the productivity of other industries, resulting in a well-balance economy in our country.

However, the industry is not without weaknesses. More often than not, the challenges often occurs in the area of productivity, efficiency of work, quality of work and most importantly, the delivery of work. Currently, we can see that our country's construction industry is still very comfortably using labour intensive and low technology methods of construction. The intensive use of foreign unskilled workers and low technology equipment and out-of-dated construction methods, has eventually caused low productivity and efficiency of work at construction site. As a result this has lead to unproductive practices and initially contributes to the late delivery of work.

1.2 Problem Statement

With the ongoing construction trend in Malaysia, that is still very comfortably using labour intensive and low technology methods of construction, this

has initially lead towards low productivity and inefficiency of work at construction site. Moreover, with the Government's call for more affordable housing, the construction industry has had to fulfill national housing and commercial needs which has eventually led to devastating compromise in quality of work.

Recently, The Government of Malaysia encourages the use of IBS especially in new government office building projects. For the start, the government insist that the office building shall have at least 50% IBS components.

The highly dependency on unskilled and cheap foreign workers has definitely contributed to low productivity of work, because although they may be cheap, but they are not efficient and result in high wastage. The quality of work has also been badly affected due to unskilled working method. After completion defects, structural failures and design inadequacies are some of the tell-tale sign of the current construction scenario in our country. According to CIDB (2000), complaints made by consumers through national media and to the authorities are some of the numerous indications of low quality of work. At the end, these will lead to decreased quality of life in uncomfortable and unfriendly environments. Statistic from Bank Negara shown almost RM 7.5 billion had been transferred from our country by foreign workers to their country.

Although the long-introduced Industrialised Building System (IBS) has promised to solve and improved the current construction method and scenario in our country, but the IBS method has been low in gaining popularity, partly due to lack of awareness and coordination among the relevant parties. Currently, the level of usage of IBS method is very low as compared to the conventional methods in building construction. In spite of its many benefits, the different perceptions among the construction players and practitioners towards its application in construction industry has led to the low usage of IBS components in the construction industry.

Moreover, the benefits of IBS applications in the construction industry has yet to be known and uncovered due to lack of research studies conducted in the Malaysia's construction perspective. Our local construction players are still in doubt of the efficiency of IBS method of construction as compared to the conventional method. The question to how much can the IBS method contributes towards reducing the total construction period, the efficiency of the assembling and erection processes at site and the production stage still lingers on and remain unanswered. At the end of the day, the IBS method remains unknown and unfamiliar to the local construction industry.

Currently, public buildings in Malaysia are still widely constructed using the usual conventional Cast-In-Situ method. Many problems are associated with the conventional method, since the traditional brick and mortar give low and inconsistency quality since workmanship plays the main role, in which again relying on the skills of the foreign unskilled workers. With poor quality control at site, common problems such as project delay and possible monetary losses are a constant headache for the Client. Late delivery of work will often resulted in late occupancy of the building, and this often caused insufficient for public facilities.

1.3 Aim and Objectives of Study

The aim of this study is to improve the implementation of IBS in Malaysia Construction Industry. The improvement involves reducing the production time, selecting the accurate amount of resources, and identifying the optimum production line according to a specific layout.

To achieve the above aim, the following objectives have been identified:

1. To identify the success factors and barriers for IBS adoption in Malaysian building construction industry
2. To rank the implementation success factors and barriers of IBS adoption
3. To suggest the strategic implementation plan of IBS in Malaysia

1.4 Scope of study

1. Only Conventional Method and Industrialised Building System in Malaysia will be considered in this study
2. The study is limited to clients or developers, consultants, contractors and suppliers from the government agencies, private construction companies, and local contractors in Malaysia construction industry.
3. The study is limited to only housing projects or residential buildings.

1.5 Significance of Study

1. To reduce transfer of fund to foreign country.
2. To increase the level of IBS adoption.
3. To reduce the implementation of the conventional method.
4. It is hoped that it will fulfill the vision of CIDB and the Government of Malaysia.